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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/003,258	12/06/2001	Nobuyuki Ohminami	829-593	4463

7590 03/26/2004

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EXAMINER

HAMDAN, WASSEEM H

ART UNIT PAPER NUMBER

2854

DATE MAILED: 03/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/003,258

Applicant(s)

OHMINAMI, NOBUYUKI

Examiner

Wasseem H Hamdan

Art Unit

2854

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4 and 10 is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 March 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Amendment

1. This office action is in response to applicant's Appeal Brief filed on 11/10/2003.
2. The Final rejection mailed on 04/08/2003 has been withdrawn.

Drawings

3. The drawings are objected to because boxes 1, 2 and 10 require descriptive legends. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Labl – Capacitance Measurement (Physics 3 Spring 1989) in view of Japanese Patent Laid-Open No. 06-112289 (inventor: Kono Motohiro et al.).

Regarding claims 1, 7 and 8, "Physics 3, Lab 1" discloses an insulator capacitance analyzer for analyzing C-V characteristics [Figure 3] of a first structure having unknown capacitance [C₂], comprising:

a capacitance structure having known capacitance [C_1] and configured so as to be serially connected [Figure 3] to the first structure [C_2]; and
a measuring section [page 4/7, third section], for measuring synthesis capacitance [page 4/7, third section].

Regarding claims 1, 2, 7, 8 and 9, “Physics 3, Lab 1” discloses the essential elements of the claimed invention except for MIS structure. Kono et al. discloses MIS structure [page 15 (Drawing 2; page 4 [0013])]. It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to modify the teachings of “Physics 3, Lab 1” by including MIS structure, since it would be beneficial for the purpose of measuring electric characteristics of a semiconductor wafer, such as C-V curve.

Regarding claims 2 and 9, “Physics 3, Lab 1” discloses at least one of a second MIS, a dielectric, and a capacitor [page 2/7, equations 1 and 2, based on the basic theory of the capacitance C-V measurement, one ordinary skill in the art at the time of the invention would be able to add as many capacitors as the design is needed].

Regarding claim 7, “Physics 3, Lab 1” discloses the essential elements of the claimed invention except for calculating capacitance of the unknown capacitance based on the synthesis capacitance. Kono et al. discloses calculating capacitance of the unknown capacitance based on the synthesis capacitance [section 0016]. It would have been obvious to a person having

Art Unit: 2854

ordinary skill in the art at the time of the invention was made to modify the teachings of “Physics 3, Lab 1” by including calculating capacitance of the unknown capacitance based on the synthesis capacitance, since it would be beneficial for the purpose of measuring electric characteristics of a semiconductor wafer, such as C-V curve.

Regarding claim 3, “Physics 3, Lab 1” discloses wherein the capacitance structure is configured so as to be removable from the insulator capacitance analyzer [Figure 3].

5. Claims 5 and 6 rejected under 35 U.S.C. 103(a) as being unpatentable over Lab1 – Capacitance Measurement (Physics 3 Spring 1989) in view of Japanese Patent Laid-Open No. 06-112289 (inventor: Kono Motohiro et al.) as applied to claims 1-3 and 7-9 above, and further in view of in view of Japanese Patent Laid-Open No. 1 1-150246 (OKI Electric IND LTD).

Regarding claim 5, “Physics 3, Lab 1” and Kono together disclose the essential elements of the claimed invention. However, Physics 3, Lab 1 does not explicitly wherein the equivalent silicon oxide thickness of the capacitance of the capacitance structure is 3 nm or more. Japanese Patent Laid-Open No. 11-150246 discloses wherein the equivalent silicon oxide thickness of the capacitance of the capacitance structure is 3 nm or more [English abstract]. It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to further modify the teachings of “Physics 3, Lab 1” by further including the equivalent silicon oxide thickness of the capacitance of the capacitance structure is 3 nm or more. The skilled artisan would have been motivated to modify “Physics 3, Lab 1” as above for because the

Art Unit: 2854

appropriate thickness of silicon oxide film prevents leakage current [Japanese Patent Laid-Open No. 11150246: advantage].

Regarding claim 6, "Physics 3, Lab 1" and Kono together disclose the essential elements of the claimed invention. However, "Physics 3, Lab 1" does not explicitly the capacitance structure is configured so as to prevent direct tunnel leakage current from flowing through the capacitance Structure. Japanese Patent Laid-Open No. 1 1-150246 discloses wherein the capacitance structure is configured so as to prevent direct tunnel leakage current from flowing through the capacitance structure [Japanese Patent Laid-Open No. 11-150246: advantage]. It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to modify the teachings of "Physics 3, Lab 1" by including wherein the capacitance structure is configured so as to prevent direct tunnel leakage current from flowing through the capacitance structure. The skilled artisan would have been motivated to modify "Physics 3, Lab 1" as above for because the appropriate thickness of silicon oxide film prevents leakage current [Japanese Patent Laid-Open No. 11-150246: advantage].

Allowable Subject Matter

6. Claims 4 and 10 are allowed.

Response to Arguments

7. In response to applicant's argument, the argument is moot since a new rejection has been set forth.

Art Unit: 2854


8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wasseem H Hamdan whose telephone number is (571) 272-2166. The examiner can normally be reached on M-F (first Friday off) 6:30 AM- 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Andrew H Hirshfeld can be reached on (571) 272-2168. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wasseem H. Hamdan

March 18, 2004


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